The Circular.

PUBLISHED WEEKLY

BY THE ONEIDA AND WALLINGFORD COMMUNITIES.

NEW SERIES. MOUNT TOM, MONDAY, JULY 4, 1864. VOL. I., NO. 16.

POST-OFFICE ADDRESS,
THE CIRCULAR, WALLINGFORD, CONN.

TERMS.

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THEODORE L. PITT, EDITOR.

SCIENCE AND SOCIETY.

THE ANNUAL OF SCIENTIFIC DISCOVERY; or Year-Book of Facts in Science and Art for 1864. By David A. Wells. Boston: Gould and Lincoln.

THOSE who would keep the time of day in scientific matters and note the progress of discovery in all material directions, will find in this book much interesting reading. It is one of a series, published annually, in which the new thoughts and discoveries of scientific men throughout the world are brought together, so as to present at a glance the latest stage and boundary to which science has advanced during the year. This book furnishes ample evidence of the wonderful activity and success of scientific research at the present time. We think there was never anything like it before. Earth, sea and air, the stars and the elements, are ransacked by eager explorers who deem nothing in the realm of matter too deep or distant for their curiosity. The universe has become a sort of grandmother's cupboard to these children of science, in which nothing new comes amiss, and the higher the shelf to be scaled the better the sport. One finds a new world in the sky; another a new metal in the earth; a third finds a way to make things chemically instead of growing them; and a fourth says that heat is not heat but is motion, &c., &c. Nature's secrets are thus being continually teased out of her, and things that hold back from discovery this year, are expected to yield to more close inquiry next. The branches in particular of Natural Philosophy, Chemistry, Geology, Zoology and Astronomy, seem to be more than ever in a state of boundless ferment through the startling light which new facts and theories are continually throwing upon them.

While this astonishing progress is true of the material side of science, the fact is equally striking on the other hand, that, of the subject which more directly concerns human welfare than any other, the SCIENCE OF SOCIETY, human and divine, the book before us contains absolutely not one word!

Of poverty, its causes and cure, nothing.

Of war, yes, plenty about its weapons—cannons, projectiles and gun-cotton—but of the means of displacing and preventing it, nothing.

Of the waste and utter lack of economy in the usual construction of society, or any suggestion towards avoiding it, nothing.

Of unhappy marriages, prostitution, illegitimate births, excessive propagation, the breaking up of families and separation of children from their aged parents, to found new families, nothing.

Why is this? Is it because these topics do not belong to the domain of science? Is it because man is so insignificant in nature that his concerns are beneath the notice of science, and are fit to be treated only by the philanthropist and preacher? Is he below aluminum or oxygen gas?

The truth, of course, is the reverse of all this; and yet science in its reputed seats wholly ignores Society. The strange anomaly is presented of a corps of scientific men eagerly engaged all over the world with everything else except the central summit of human interest, and passing that dumbly by; enacting, as to science, the play of Hamlet with the part of Hamlet left out.

We think a careful scrutiny of the relations which science holds to social truth will enable a person to exactly locate it and estimate its present stage of development and importance. It is slowly working its way up from the circumference, or the study of material relations, to the center, which is occupied by the social question. Its deductions drawn from all the scattered lines of its approach, though interesting, are not very fruitful in themselves of human happiness; and they have no common organic bond. Their use is in training men to exact thought, and preparing materials for the day when the splendors of social science shall break on human thought, and flood men's life and knowledge with heavenly light and love.

The reason why the search for an organizing principle, a universal philosophy to combine the scattered pillars of science into a symmetrical whole is thus far vain, is, that this principle is properly hidden at the very center of the scientific sphere, viz., as we have said, in the sanctuary of social science; and not until the human mind arrives fairly at that consummation, not until by culture in the love of truth, it rises to the earnestness of a great demand for the knowledge of its social relations with God and with its fellow, will any such harmonizing principle be found.

That this principle exists we fully believe, and that Jesus Christ gave a hint of it in his last discourse with his disciples is equally evident. Imaging to ourselves all knowledge in the form of a circle, whose radiating lines converge upon a center, and that center represented by social science, we can see that Christ, avoiding the common course of scientific research, which has been from the circumference to the center, placed himself with his disciples at once in the center, or social point of truth. Jumping all questions of technical science, postponing attention to material discoveries about planets and tertiary formations, oxygen and heat, he took his stand on the central position of social life, announced the doctrine of duality in unity, or two in one, and thence set his disciples to study the sciences, from within outward. This formula of Dual Unity, as expressed in the combinations, God, Christ; Christ, man; male, female; man, woman; Jew, Gentile; &c., we believe will be found to extend down through all the series of life, and to organize all the branches of knowledge. With this guide, the study of science in Heaven is organic, from the center, outward; from the social to the material; and it is only when men can begin to study it from the same point, that it will cease to be fragmentary, and become vital.—We care not how they get there, whether from a laborious course of outward study on the circumference of things, or by the more direct teaching of the heart, sooner or later they must start with Christ from the center, and then the study of social science will assume an importance, and be invested with an interest that will dim all other research, and before its light such evils as poverty, war, oppression, and crime will fade from the earth. G. W. N.

NOTES FROM COMMUNITY CONVERSATIONS.

(Phonographically Reported.)

PUNCTUALITY.

N.—The more we look into it, the more important punctuality appears in every thing.—If we go back to the beginning of Perfectionism, we find that the very germ of all our faith consisted in believing in the punctuality of God. In fact it was the question of *time* that was at the foundation of the very constitution of Perfectionism. We found in the New Testament that Jesus Christ said that he would come the second time within the lifetime of one generation. The whole world said that he did not come—that is, that he was slack and shiftless about his word; and we said that he did come—we believed in his punctuality. That was the beginning of our departure from the churches; that is the foundation of our faith. Instead of our being called Perfectionists we might be called Punctualists. We are, by the very first principles of our faith, a punctual people—a people who believe in God, that he will keep his

promises and do things when he says he will. We will be followers of God in that thing in all our dealings. Of what vast importance is this principle of punctuality! It is the main principle that enters into the great system of credit in the world, and it is that principle which makes it possible to do the immense business that is done in the world—the belief of people in the possibility of doing what they say they will, and at the time they say they will. We cannot magnify the importance of this principle beyond its merits. We may as well place our whole purpose and faith on that basis—the special punctuality of God in fulfilling his promises in respect to the Second Coming.

Persons may take this doctrine in a wrong way, as a kind of pressure requiring them always to be on the jump, but it is just as important not to do things before the time as to fall behind the time. In music, it is just as bad to hurry the time as to get behind. The true principle of punctuality requires you to hold still and wait on the Lord—not undertake things until your time. Hence there may be a great deal of leisure and quietness in the career of a punctual man. Probably a really punctual man, who is in earnest to serve God, will have a great deal more quiet time than the man who is in a worry about his cares, and is in a hurry to do things before the time. The punctual man is one who, as in the case of Christ, does not go before his time. Christ's patience and faith to wait his full time, was in all cases a great trial to the people. God is found to be more patient and less prompt in some sense than people wish. He makes it a point to try persons' patience by seeming slack concerning his promises, and he expects them in their short-sightedness to seek him with importunity until they are almost out of patience; then he does what he has promised, and they find that he has done it exactly in the right time—neither too soon nor too late. So that if we are followers of God we shall adopt that as our principle to do things just at the right time—neither too soon nor too late. This is the only true principle of music. The science of punctuality is really to be faithful to inspiration. That is the only safe rule to work by—neither going ahead nor falling behind.

From Thoreau's "Maine Woods."

THE INFLUENCE OF MAN ON THE FORESTS.

Humboldt has written an interesting chapter on the primitive forest, but no one has yet described for me the difference between that wild forest which once occupied our oldest townships, and the tame one which I find there to-day. It is a difference which would be worth attending to. The civilized man not only clears the land permanently to a great extent, and cultivates open fields, but he tames and cultivates to a certain extent the forest itself. By his mere presence, almost, he changes the nature of the trees as no other creature does. The sun and air, and perhaps fire, have been introduced, and grain raised where it stands. It has lost its wild, damp and shaggy look, the countless fallen and decaying trees are gone, and consequently that thick coat of moss which lived on them is gone too. The earth is comparatively bare and smooth and dry. The most primitive places left with us are the swamps, where the spruce still grows shaggy with usnea. The surface of the ground in the Maine woods is everywhere spongy and saturated with moisture. I noticed that the plants which cover the forest floor there are such as are commonly confined to swamps with us,— the *Clintonia borealis*, orchises, creeping snowberry, and others; and the prevailing aster there is the *Aster acuminatus*, which with us grows in damp and shady woods. The asters *cordifolius* and *macrophyllus* also are common, asters of little or no color, and sometimes without petals. I saw no soft, spreading, second growth white-pines, with smooth bark, acknowledging the presence of the wood-chopper, but even the young white-pines were all tall and slender rough-barked trees.

Those Maine woods differ essentially from ours. There you are never reminded that the wilderness which you are threading is, after all, some villager's familiar wood-lot, some widow's thirds, from which her ancestors have sledded fuel for generations, minutely described in some old deed which is recorded, of which the owner has got a plan too, and old bound-marks may be found every forty rods, if you will search. 'T is true, the map may inform you that you stand on land granted by the State to some academy, or on Bingham's purchase; but these names do not impose on you, for you see nothing to remind you of the academy or of Bingham. What were the "forests" of England to these? One writer relates of the Isle of Wight, that in Charles the Second's time "there were woods in the island so complete and extensive, that it is said a squirrel might have traveled in several parts many leagues together on the top of the trees." If it were not for the rivers (and he might go round their heads), a squirrel could here travel thus the whole breadth of the country.

We have as yet had no adequate account of a primitive pine-forest. I have noticed that in a physical atlas lately published in Massachusetts, and used in our schools, the "wood land" of North America is limited almost solely to the valleys of the Ohio and some of the Great Lakes, and the great pine-forests of the globe are not represented. In our vicinity, for instance, New Brunswick and Maine are exhibited as bare as Greenland. It may be that the children of Greenville, at the foot of Moosehead Lake, who surely are not likely to be scared by an owl, are referred to the valley of the Ohio to get an idea of a forest; but they would not know what to do with their moose, bear, caribou, beaver, ect., there. Shall we leave it to an Englishman to inform us, that "in North America, both in the United States and Canada, are the most extensive pine-forests in the world"? The greater part of New Brunswick, the northern half of Maine, and adjacent parts of Canada, not to mention the northeastern part of New York and other tracts farther off, are still covered with an almost unbroken pine-forest.

But Maine, perhaps, will soon be where Massachusetts is. A good part of her territory is already as bare and commonplace as much of our neighborhood, and her villages generally are not so well shaded as ours. We seem to think that the earth must go through the ordeal of sheep-pasturage before it is habitable by man. Consider Nahant, the resort of all the fashion of Boston,—which peninsula I saw but indistinctly in the twilight, when I steamed by it, and thought that it was unchanged since the discovery. John Smith described it in 1614 as the Mattahunts, two pleasant isles of groves, gardens, and cornfields"; and others tell us that it was once well wooded, and even furnished timber to build the wharves of Boston. Now it is difficult to make a tree grow there, and the visitor comes away with a vision of Mr. Tudor's ugly fences, a rod high, designed to protect a few pear-shrubs. And what are we coming to in our Middlesex towns?—a bald, staring town-house, or meeting-house, and a bare liberty-pole, as leafless as it is fruitless, for all I can see. We shall be obliged to import the timber for the last, hereafter, or splice such sticks as we have;—and our ideas of liberty are equally mean with these. The very willow-rows lopped every three years for fuel or powder,—and every sizable pine and oak, or other forest tree, cut down within the memory of man! As if individual speculators were to be allowed to export the clouds out of the sky, or the stars out of the firmament, one by one. We shall be reduced to gnaw the very crust of the earth for nutriment.

They have even descended to smaller game. They have lately, as I hear, invented a machine for chopping up huckleberry-bushes fine, and so converting them into fuel!—bushes which, for fruit alone, are worth all the pear-trees in the country many times over. (I can give you a list of the three best kinds, if you want it.) At this rate, we shall all be obliged to let our beards grow at least, if only to hide the nakedness of the land and make a sylvan appearance. The farmers sometimes talk of "brushing up," simply as if bare ground looked better than clothed ground, than that which wears its natural vesture,—as if the wild hedges, which, perhaps, are more to his children than his whole farm beside, were *dirt*. I know of one who deserves to be called the Tree-hater, and, perhaps to leave this for a new patronymic to his children. You would think that he had been warned by an oracle that he would be killed by the fall of a tree, and so was resolved to anticipate them. The journalists think that they cannot say too much in favor of such "improvements" in husbandry; it is a safe theme, like piety; but as for the beauty of one of these "model farms," I would as lief see a patent churn and a man turning it. They are, commonly, places merely where somebody is making money, it may be counterfeiting. The virtue of making two blades of grass grow where only one grew before does not begin to be superhuman.

Nevertheless, it was a relief to get back to our smooth, but still varied landscape. For a permanent residence, it seemed to me that there could be no comparison between this and the wilderness, necessary as the latter is for a resource and a background, the raw material of all our civilization. The wilderness is simple, almost to barrenness. The partially cultivated country it is which chiefly has inspired, and will continue to inspire, the strains of poets, such as compose the mass of any literature. Our woods are sylvan, and their inhabitants woodmen and rustics,— that is, *selvaggia*, and the inhabitants are *salvages*. A civilized man, using the word in the ordinary sense, with his ideas and associations, must at length pine there, like a cultivated plant, which clasps its fibres about a crude and undissolved mass of peat. At the extreme north, the voyagers are obliged to dance and act plays for employment. Perhaps our own woods and fields,— in the best wooded towns, where we need not quarrel about the huckleberries,—with the primitive swamps scattered here and there in their midst, but not prevailing over them, are the perfection of parks and groves, gardens, arbors, paths, vistas, and landscapes. They are the natural consequence of what art and refinement we as a people have—the common which each village possesses, its true paradise, in comparison with which all elaborately and wilfully wealth-constructed parks and gardens are paltry imitations. Or, I would rather say, such *were* our groves twenty years ago. The poet's commonly, is not a logger's path, but a woodman's. The logger and pioneer have preceded him, like John the Baptist; eaten the wild honey, it may be, but the locusts also; banished decaying wood and the spongy mosses which feed on it, and built hearths and humanized Nature for him.

But there are spirits of a yet more liberal culture, to whom no simplicity is barren. There are not only stately pines, but fragile flowers,

like the orchises, commonly described as too delicate for cultivation, which derive their nutriment from the crudest mass of peat. These remind us, that, not only for strength, but for beauty, the poet must, from time to time, travel the logger's path and the Indian's trail, to drink at some new and more bracing fountain of the Muses, far in the recesses of the wilderness.

The kings of England formerly had their forests "to hold the king's game," for sport or food, sometimes destroying villages to create or extend them; and I think that they were impelled by a true instinct. Why should not we, who have renounced the king's authority, have our national preserves, where no villages need be destroyed, in which the bear and panther, and some even of the hunter race, may still exist, and not be "civilized off the face of the earth"—our forests, not to hold the king's game merely, but to hold and preserve the king himself also, the lord of creation—not for idle sport or food, but for inspiration and our own true recreation? or shall we, like villains, grub them all up, poaching on our own national domains?

BLITHEDALE ROMANCE.

"I wish you would read your new books to me, or at least talk to me about them," said Aunt Rebecca one day in a slight tone of reproof, after making several abortive attempts to break the silence which had been uninterrupted for nearly an hour. "If I am old and infirm, and have not long to live, I still take an interest in what interests others, and suffer when treated with neglect and indifference."

Josiah keenly felt the reproof; for though he was very attentive to every want of his aged relative, and had no occasion to condemn himself for lack of desire to do all within his power to render her life happy, yet he felt that her censure was in some measure deserved. He had not fully appreciated her sensitiveness: he had not sufficiently realized that age, while it blunts some of the natural susceptibilities, greatly quickens others; and that a course of conduct perfectly proper toward an equal, might very naturally appear like intentional neglect when exercised toward one of three-score years.

"I am very sorry, dear Aunt," he exclaimed "if I have given you the least occasion to think I have treated you with neglect or indifference, and promise you there shall be no reason for thinking so in future. The book I am reading is not a new one. It was published twelve years, ago, and is entitled "Blithedale Romance."

"Blithedale Romance," repeated the old lady, "Blithedale Romance, I can't recall any such book to mind published twelve years ago. Tell me about it, Josiah."

"With pleasure. It was written by Nathaniel Hawthorne, who died only a short time since. The 'Romance' is partly founded, the author states, on facts which transpired some more than twenty years ago in the experience of the Brook Farm Association, of which he was for a time a member; and although he disclaims any 'pretensions to illustrate a theory, or elicit a conclusion, favorable or otherwise, in respect to socialism,' and says his 'whole treatment of the affair is altogether incidental to the main purpose of the romance;' yet it is these very 'incidental' allusions to the Brook Farm society which mainly makes the book interesting to me. It is an undeniable fact, attempt to conceal or ignore it as people may, that the popular mind has a wonderful interest in all which concerns practical socialism. Men catch with avidity any record of socialistic attempts; and I venture to affirm that ninety-nine out of every hundred who read accounts of the failure of such enterprises as the Brook Farm Association, the North American Phalanx, the Sodus Bay Association, the Skaneateles Community, and many others, secretly wish they had not been failures. And the reason is plain. Nearly every person feels that the present social arrangements of the world are based on wrong principles, or, at least, are susceptible of great and radical improvements, and so he inwardly hopes that a better state of things may be successfully inaugurated somewhere. Even Mr. Hawthorne, while in some instances he ridicules, and in other cases satirizes the movement in which he took part, says of it: 'More and more I feel that we had struck upon what ought to be a truth. Posterity may dig it up and profit by it.'"

Josiah paused, expecting his good Aunt would make objections to his sweeping statement; but she only inquired for further particulars respecting the Brook Farm Association.

"I have but few particulars to give," he replied. "It is a matter of regret that no history of the enterprise has been written. I only know that there was gathered at Roxbury, Mass., some twenty years ago, a company of socialists, who hoped to realize their ideal of a better life than that of their predecessors or cotemporaries. It included many names which have since become eminent in the world of letters. Ripley, one of the present editors of the New York *Tribune*, was the father of the movement; with him were associated Dana, formerly also an editor of the *Tribune*, and also one of the editors of the New American Cyclopædia, but now Assistant Secretary of War; William H. Channing, a Unitarian Minister in Washington; Curtis, the popular author and lecturer; Dwight, Parker, and others, whose names are now honored in the field of letters. Never, perhaps, was grouped together in such an enterprise a greater array of talent. To borrow our author's words: 'A man of intellect and feeling, with a free nature in him, might have sought far and near without finding so many points of attraction as would allure him hitherward.' The Community published for a time *The Harbinger*, a paper full of interest to those who were interested in the Brook Farm movement, or favorably inclined toward socialistic reform. Our author tells us how at first they 'pleased themselves with delectable visions of the spiritualization of labor. It was,' he says, 'to be our form of prayer and ceremonial of worship. Each stroke of the hoe was to uncover some aromatic root of wisdom, heretofore hidden from the sun. Pausing in the field, to let the wind exhale the moisture from our foreheads, we were to look upward, and catch glimpses into the far-off soul of truth.'"

"I don't believe such a set of dreamers ever accomplished much in the line of agricultural productions, or even in adorning their Arcadia with beautiful gardens and pleasant walks, by the work of their own hands," said Aunt Rebecca in her direct way. "With all their talent and learning, and high-flying theories, I presume they depended on hired laborers to do all their hard work."

"O, no; if we can credit our author, these dreamers, as you call them, plowed and hoed, shovelled and mowed, and laid up stone-wall.—'After a reasonable training,' he says, 'the yeoman life throve well with us. Our faces took the sun-burn kindly; our chests gained in compass, and our shoulders in breadth and squareness; our great brown fists looked as if they never had been capable of kid-gloves. To be sure,' he continues, 'our neighbors pretended to be incredulous as to our real proficiency in the business which we had taken in hand. They told slanderous fables about our inability to yoke our own oxen, or to drive them afield when yoked, or to release the poor brutes from their conjugal bond at night-fall. They had the face to say, too, that the cows laughed at our awkwardness at milking-time, and invariably kicked over the pails; partly in consequence of our putting the stools on the wrong side, and partly because, taking offense at the whisking of their tails, we were in the habit of holding these natural fly-flappers with one hand, and milking with the other. They further averred, that we hoed up whole acres of Indian corn and other crops, and drew the earth carefully about the weeds, and that we raised five hundred tufts of burdock, mistaking them for cabbages; and that, by dint of unskilful planting, few of our seeds ever came up at all, or if they did come up, it was stern-foremost; and that we spent the better part of the month of June in reversing a field of beans, which had thrust themselves out of the ground in this unseemly manner. They quoted it as nothing more than an ordinary occurrence for one or other of us to crop off two or three fingers of a morning, by our clumsy use of the hay-cutter. Finally, these mendacious rogues circulated the report that we communitarians were exterminated to the last man, by severing ourselves asunder with the sweep of our own scythes!'"

"I believe their neighbors were not altogether wrong, but pray tell me how the society came at last to break up."

"It would be very interesting to know the secret and true history of its dissolution. Hawthorne only says: 'The experiment so far as its original projectors were concerned, proved long ago a failure: first lapsing into Fourierism, and dying, as it well deserved, for this infidelity to its own higher spirit.' We have been informed that a fire which destroyed a large building, in which a considerable share of the capital of the society was invested, was the immediate cause of its dissolution. This event however, could have been no more than the immediate occasion of that result—the real cause must have been deeper. Perhaps some member of the association may yet reveal to the world its inner life, and truthfully indicate its weak points. Till then every one is free to draw his own conclusions. A probable one is, that the members were not united by a common religious faith, and hence had no vital heart connection—their aspirations and purposes did not converge toward Christ and his glory. In all such combinations there must be spiritual unity, or there will soon be discontent and contention. Hawthorne, in a passage which I will read, admits that there was no such vital bond of unity. He says: 'We were of all creeds and opinions, and generally tolerant to all, on every imaginable subject. Our bond, it seems to me was not affirmative, but negative. We had individually found one thing or another to quarrel with in our past life, and were pretty well agreed as to the inexpediency of lumbering along with the old

system any farther. As to what should be substituted, there was much less unanimity.' "

"You said," interposed Aunt Rebecca, "that the author's treatment of socialism was incidental to the main purpose of the Romance. Will you give me some idea of the principal story of the book, if you have got through with the incidental portion?"

"I would rather be excused," replied Josiah; "for aside from its allusion to the Brook Farm experiment, the book is quite unpleasant to read. The principal characters which appeared so noble at first, exhibit in the course of the narrative the selfish and ignoble qualities which belong to unregenerate human nature; and the conclusion is horrible and very unsatisfactory. The author's style is in some respects entertaining, but it is impossible to read his productions without pain and displeasure. He throws the gloom and unbelief of his own spirit over all. His writings not only tempt one to doubt human worth, but the goodness of the God above. Especially is this the case with the Blithedale Romance. Unbelief and disappointment form the key note of the whole. 'My past life,' he says, 'has been a tiresome one enough; yet I would rather look backward ten times than forward once. For, little as we know of our life to come, we may be very sure, for one thing, that the good we aim at will not be attained. People never do get just the good they seek. If it come at all, it is something else, which they never dreamed of, and did not particularly want.' What a gloomy outlook is that! What a confession that evil is omnipotent, and the devil's providences omnipresent! The entire Romance is in the minor mode, which some one describes as an 'everlasting whine.' Mr. Hawthorne represents himself as a foiled man all through the work—foiled by Zenobia, by Priscilla, by Hollingsworth, by Westervelt, and concludes by confessing himself an unsuccessful lover. I think now you have heard enough about Blithedale Romance."

"Yes, I will excuse you, unless you have some page in mind which is especially interesting that you would like to read."

"Here is a passage which describes the mental state and purposes of the reformers at the outset of their new enterprise:"

"If ever men might lawfully dream awake, and give utterance to their wildest visions without dread of laughter or scorn on the part of the audience,—yes, and speak of earthly happiness, for themselves and mankind, as an object to be hopefully striven for, and probably attained,—we, who made that little semi-circle round the blazing fire, were those very men. We had left the rusty iron frame-work of society behind us: we had broken through many hindrances that are powerful enough to keep most people on the weary tread-mill of the established system, even while they feel its irksomeness almost as intolerable as we did. We had stept down from the pulpit; we had flung aside the ledger; we had thrown off that sweet, bewitching, enervating indolence, which is better, after all, than most of the enjoyments within mortal grasp. It was our purpose—a generous one, certainly, and absurd, no doubt, in full proportion with its generosity—to give up whatever we had heretofore attained, for the sake of showing mankind the example of a life governed by other than the false and cruel principles on which human society has all along been based. And, first of all, we had divorced ourselves from pride, and were striving to supply its place with familiar love. We meant to lessen the laboring man's great burthen of toil, by performing our due share of it at the cost of our own thews and sinews. We sought our profit by mutual aid, instead of wresting it by the strong hand from an enemy, or filching it craftily from those less shrewd than ourselves (if, indeed, there were any such in New England), or winning it by selfish competition with a neighbor; in one or another of which fashions every son of woman both perpetrates and suffers his share of the common evil, whether he chooses it or no. And, as the basis of our institution, we purposed to offer up the earnest toil of our bodies, as a prayer no less than an effort for the advancement of our race."

"Hawthorne intimates that the purpose of the Brook Farm socialists, as here expressed, was 'absurd in full proportion with its generosity.' I think, on the contrary, that purposes like theirs, looking toward progress and emancipation from selfishness, are noble—worthy of all praise: and that men are utterly 'absurd' when they allow riches, cares, and disappointments, to chill all the nobler impulses of their souls, and limit their efforts to narrow and selfish spheres. I hope such 'knots of dreamers' will be multiplied, and that, learning wisdom from the errors of those who have preceded them, they will practically realize their high aspirations for the improvement and happiness of their fellow men."

"But they must not be so absorbed in their dreams of doing good on a large scale as to forget those near at hand, who need their assistance," added Aunt Rebecca in a tone which conveyed more approval than censure.

WHICH IS THE REAL?

"Why is it," said a friend, "that in my highest enjoyment and appreciation of music, poetry, natural scenery, and, I may say, of love itself, I am unable to stop with the thing which causes my pleasure, but am led beyond, into a world radiant with dim splendor—vague, and elusive, it is true, yet glorious beyond anything which I can describe? I never experience any deep moving of the heart in this way without undergoing sensations which I cannot account for from any natural cause. To illustrate my meaning more specifically: I never listen to a fine piece of music, well executed, without being strangely moved; I hear and feel unutterable things; music which transcends human conception; love which surpasses human knowledge. Is this general experience, or am I singular in it?"

Such things, we replied, are more general than you imagine. Most men have a recess in their heart devoted to what is called "the ideal." The majority, however, are ashamed to acknowledge its presence, and carefully hide it from public view, as if it were weak and unmanly. But it may yet be found that there is more reality in this inner sphere of life than in the outward, material existence which pertains to the life we live in the body. Whence come the visions of future glory which fill the mind of every unsophisticated youth? Does God implant such things in the human breast merely to tantalize us with their unreal beauty, or to mock our weary souls with the shadows of unattainable bliss? It is fashionable for men who have outlived the "follies" of youth to sneer at the buoyant imaginations of childhood; but the freshness of heart which is susceptible to such emotions is infinitely nearer heaven than the arid sterility of the hardened man of the world. We may call these ideal anticipations, prophetic instincts; glimpses of our ultimate destiny, if we follow the highest guidance. Instead of being given to tantalize and torment us by their unreality, their office is, to tempt us away from the world, into the pathway which alone will lead to their realization. When you experience these indescribable sensations of which you speak, you may consider them, not as vague, illusory dreams, but as a dim foreshadowing of a reality which is in store for you, compared with which your most glorious imaginings are tame and common place. Only be true to Christ, and he will prepare you a place in a world, the glories of which no eye has seen, nor ear heard, nor heart of man conceived. This is the world of which you obtain such passing glimpses, and of which what you call the ideal is but a transient shadow. C. S. J.

WORKMEN TO THE COMMUNITY.

Oneida, N. Y., June 25, 1864.

DEAR EDITOR:—Through the columns of your paper, we would express our sincere thanks to the Oneida Community for their excellent refreshments and beautiful music, got up for the entertainment of their laboring men and their families on Tuesday the 21st. The tables were arranged with exquisite taste, on the lawn in front of the Community dining-hall, with the shrubbery, trees, and flowers around us; and every thing wore such an aspect of quietude and loveliness as made it a very pleasant affair. The band displayed their skill at the concert in the evening, with Mr. B. at their head; and we heartily enjoyed the songs—John Brown and the others. The children too with their little sunny faces filled the room with the beautiful song, "Rally Round the Flag, Boys." We hope the Community will accept our sincere and hearty thanks, for we rarely enjoy such a feast.

Yours with respect, MECHANICS.

CORRESPONDENCE.

QUEER DOINGS OF BIRDS.

Oneida Commune, June 24, 1864.

Last year I discovered on our lawn, a common sparrow or chipping-bird engaged in feeding and mothering a young bird twice as large as itself. On inquiring of bird-observers, and consulting books, I learned that it is the habit of the cow blackbird or cow-bird (as it is frequently called), to shirk its own family cares by laying its eggs in the sparrow's nest. Incredible as it seemed that one bird should thus put out its young to nurse, and that another bird should submit to the imposition of hatching and rearing them, we found ourselves compelled by facts to accept the story. Several other instances were found in our neighborhood, and we heard of many in other places.

This year I have had an opportunity to look a little farther into this mystery of domestic life in the bird-world. I found in a bush on the lawn a sparrow's nest, with father and mother busy about it, and in it two eggs, entirely different from each other in size, shape, and color. One was blue, long, and small—evidently the sparrow's own egg; the other was brown, and speckled, nearly round, and much larger—too large for the nest, evidently an interloper. Afterwards we saw a cow-bird associating with sparrows, hopping about in the grass, and feeding with them. Thereupon we searched the bushes in the neighborhood and found two other sparrow's nests appropriated in the same way. One of them had, like the first, two different eggs; and the other had a single egg of the large brown sort. In this last case the cow-bird seems to have discovered the nest while the sparrow was building, and to have occupied it first.

Seeing how common this interloping is, and how

friendly the cow-bird and sparrows seemed to be to each other, I was tempted to think that this might be a little specimen of natural communism, in which the lack of "talent for taking care of children" on the part of the cow-bird, is compensated by the special adaptation of the industrious little sparrow to domestic cares. It seemed possible that the transfer of responsibility, instead of being fraudulent and oppressive, might be the result of a friendly understanding. And it certainly is true that the sparrow appears to enjoy her maternal attendance on the lubberly young cow-bird as well as if it were her own offspring. But subsequent observations made this pleasant theory very doubtful. In the first place we discovered that the two nests last found were ultimately deserted by the sparrows, and the eggs left unhatched. This indicated something like revolt against the intrusion on the part of the sparrows. But the worst thing about the matter came to light in the case of the nest first found. The busy little proprietors of this nest went on with their work as though all were right, and faithfully hatched both eggs. But a few days afterward *only one of the birds was to be found, and that was the big one.* Then I remembered that the books told us last year that the unfledged cow-bird contrives to hustle the young sparrows out of the nest. This is certainly adding injury to intrusion, and cannot be smoothed into anything like fair communism. The disappearance of the young sparrow from the nest this year, and the fact that in every case observed last year, the old sparrow was found feeding only adopted children—never its own children with them—makes it quite probable that the poor sparrows are not only made to work hard for strangers, but to sacrifice their own offspring to the selfishness of the intruders.

So much for sparrows and cow-birds. Now for a funny story about robins. Yesterday some of our boys in high glee brought to my room an astounding conglomeration of sticks, straws, mud, and—*ladies' collars!* This I soon made out to be a robin's nest. The collars—light strips of lace, crochet work, and plain linen—were woven into the body of the nest in all sorts of tangles, and hung around it like beggars' streamers. Our young ladies and some of the older ones have missed their collars lately at a wonderful rate, and were beginning to think that thieves were about. And behold! an industrious robin had built her house of them! The boys saw the robin carrying one off from the grass-plot where they were drying, followed her, and found *twenty-nine* of the missing collars woven into one nest!

J. H. N.

THE MERCANTILE PAST AND PRESENT.

Oneida Commune, June, 1864.

Mr. Editor:—Having seen service in the mercantile war in my younger days (excuse the phrase, for these war times convert all past experiences into military service of some kind), I am interested in contrasting the past with the present. Thirty or forty years ago, merchants from all parts of the country were obliged to make annual or semi-annual visits to the city for the purpose of purchasing goods for country trade. And those visits were usually prolonged from one to six weeks. At that period railroads were rare, and express companies not in existence; so that a very much longer time was required for transporting merchandise to the country, than at present. The consequence was that merchants would purchase *heavily*, so as to be sure of a supply of goods for six months or a year. The cash or ready-pay system was at that time scarcely known in the mercantile world; hence, all purchases and sales were made on time, involving the contracting of heavy debts with city merchants. And, according to a natural law, the debtor, being servant to the creditor, bargains away a share of his freedom, and so, in a sense, makes himself a slave to his circumstances. And when it so happened that this mercantile debtor-owner was an unprincipled man, which was not unfrequently the case, the country debtor could not do otherwise than follow the dictation of his creditor in the purchase of goods at exorbitant prices, and in making larger bills, not only of merchandise, but of city vices and immoralities, than his conscience and better judgment could under any circumstances justify. Thus, laden with heavy debts, and perhaps with a heavier conscience, and a damaged character, the country merchant was permitted to return to his home, with the exhortation to be diligent in business and fervent in paying his debts.

It was not surprising, therefore, that in those days, not only failures in property were frequent, but failures in character, in morals and social standing, were not rare. The great burden of trade was not in buying and selling goods, but in paying for them and in collecting the proceeds of sales, requiring a vast amount of distressing, not to say disgusting labor; such as dunning, suing, collecting, feeing lawyers, &c. And, to receive remuneration for the same, unreasonable profits on goods were charged, so that the poorest consumer who paid his own debts, paid extra prices for goods as a sort of tax to make up to the merchant his losses by his dishonest debtors.

But I need not dwell on this picture longer, though none who were acquainted with those times will question the accuracy of the likeness.

We will now look at some of the changes brought about by various influences evolved by the spirit of progress and civilization. And among the instruments employed in bringing about improvements in the business or commercial world, rail-roads, telegraphs, express companies, newspapers, &c., may be reckoned as the most potent. These agencies have conspired, by abolishing time and space, in a sense, to bring city and country together—to dwell as it were under the same roof, where the business of each is fully known to the other. Through the newspapers, the country merchant, for instance, residing five hundred miles from the city, can post himself daily as regards current wholesale prices of all sorts of merchandise, both foreign and domestic. And, instead of traveling that distance to purchase goods, he is waited upon at his own house by agents from extensive city firms, with samples of all kinds, of both dry-goods and groceries, the prices of which, can be at once compared with the price-current list found in the daily papers. If the goods thus purchased are wanted immediately, the agent telegraphs the order to his city firm and in a few hours the goods thus ordered are in the possession of the express company and on their way to the store of the country dealer. Thus, business transactions are accomplished in a few hours, that formerly required weeks, to say nothing of the saving of expense, time, and perplexities.

Other changes for the better, of equal or greater importance, have been steadily going on in the commercial world. Merchants are combining their capital, building magnificent stores, and are selling more goods and at smaller profits than formerly. But the *cause* of these changes and great improvements will be found in the adoption of the cash, instead of the credit system. The latter was adopted from necessity, when the country was destitute of a reliable currency and resources of wealth. The cash system has been adopted from principle. The increased facilities for the distribution of goods, which is the principal function of the merchant, obviate the necessity of long credits. *Cash on delivery*, is the motto now. "Short credits, and long friends," is an old but true adage. The South is an example of the opposite, of long credits and short friends. She bought her goods of the North on two or three years time. Southern chivalry despised *close* buying. Her motto was, Trust me for your goods and charge what you please, allowing me to pay when I please.—When the rebellion broke out, the South was owing New York city alone, one hundred millions of dollars, which she has repudiated;—long credits and short friends with a vengeance, one might say.

In reflecting upon the foregoing improvements, it would seem that every thing in the business world is tending in one direction, namely, *telegraphic promptness and brevity.* The shortest route and the greatest speed, is the demand issued from head-quarters.—And against such a mandate there should be no protest. The business of merchants, bankers, agents, &c., is that of *serving* the producers and consumers; and great dispatch and faithfulness are the essential qualifications for such service.

In conclusion, I would say that every thing indicates, more than ever before, that mankind is being put to school to be educated out of *worldliness* and *barbarism.* The head instructor is present only by proxy; but order and classification are gradually being secured. And, in the process of classification, I opine, that many old customs and prejudices will be set aside. Old classes will be broken up, and new ones formed. If the principal of the school has prejudices in favor of one class more than another, it will perhaps be that of *mechanics*, as he was formerly one himself. In all probability, when the school is fully organized it will be seen that the merchants and mechanics, for instance, have changed places; the former at the foot and the latter at the head. But I will not speculate further. Suffice it to say, that the object of economizing time appears to be to give all classes of society opportunities of self-improvement. A liberal portion of the day for study, reflection and prayer, should be the privilege of the merchant, mechanic, farmers and all workers of every grade. In cities, every large mercantile house should be an academy also, and every meat-market a school for anatomy and surgery.

G. C.

A GLIMPSE AT SARATOGA.

Hoboken, N. J., June 26, 1864.

Friend Pitt:—I will note down a few things about Saratoga Springs, having recently spent a day there. I do not understand that there is any thing particularly beautiful about the natural scenery of the place other than can be found in almost any inland town of northern and eastern New York. The Park, at the southern or western terminus of the village, speaks well for the liberality and artistic taste of Clark and White, the sole proprietors, I learn, of the numerous springs of the place. The ravine, the green grass, the shady trees, the constantly swept walks, the convenient iron seats, and last, but not least, the tame and unmolested birds and squirrels contribute to make this a very pleasant place of resort for visitors.

The two leading features of interest at Saratoga, are the Mineral Springs and the Hotels. To most visitors, perhaps, the hotels would stand first and the springs second in point of attraction; but I am not one of the number. To me these springs are a wonderful exhibition of nature. There are twelve of them in number, included within the space of a square mile, and some of them within a few rods of each other; and yet, the quality or taste of the water of each separate spring is obviously distinct, and peculiar to itself. There is, I am told, but one sulphur spring among the number. For the most part "these waters are called acidulous, from the abundance of carbonic acid and carbonates which they contain; and owing to their large impregnation with chloride of sodium or common salt." One thing noticeable is, the supply of water appears exhaustless. Congress and Empire springs (particularly the first mentioned), have each an extensive apparatus for bottling and boxing the water for transportation, which is kept in active operation during the summer season. The water is very cold, no small item when the mercury is at 98 in the shade, as it is this afternoon. As to the flavor and effects of the water, I can only speak for myself. I found it "every way pleasant and agreeable." I drank copiously and often during the day, and reluctantly took my departure in the evening. Soda water and wine, even, hold no comparison, as wholesome stimulants, to the waters of Congress, Empire and Washington springs, respectively.

Secondly, the hotels. The southern portion of Broadway is all hotels, and four of them are of the most extensive, magnificent and approved style.—Union Hall has a front of four hundred feet, with wings of nearly six hundred feet in extent. The court enclosed by the buildings forms a lawn or park of several acres, interspersed with shaded walks. Congress Hall, United States hotel, and the Clarendon house, are built on a similar scale. The capacity of these four houses is sufficient to furnish ample accommodations for twelve hundred guests each.—Aside from these "crack houses" there are multitudes of a less noted character. The enlargements to the various public houses, made this season, are

sufficient to accommodate four thousand additional visitors beyond the number of any former year. The great rush there during the years 1862–3, has excited great expectations on the part of hotel keepers for the present season.

As the focus of fashion and display, I suppose Saratoga stands unrivaled; but I was there too soon for its usual culmination (at and after the Fourth of July), and so cannot speak definitely. I will say however, that upon the arrival of the afternoon train, I noticed not a few of what are technically called among trunk-makers and dealers, owing to their huge dimensions, "Saratoga trunks," landed in front of the veranda where I was sitting. These trunks contained unquestionably the fashionable cuts and colors of the season; but to me they were invisible, and comparatively uninteresting. In conclusion, I would say that while at Saratoga, by an unexpected but happy coincidence, I found myself the guest, not of Union Hall, but of Mr. and Mrs. M., who contributed to make the day I spent there, little short of a royal entertainment. Yours very truly, H. W. B.

From the Annual of Scientific Discovery.

RESEARCHES ON FERMENTATION AND PUTREFACTION.

For some years past, M. Pasteur, a distinguished French chemist, has been engaged in investigating the phenomena of fermentation and putrefaction, and the results attained to by him constitute some of the most important contributions made to chemical science during the past few years. In the report of researches heretofore published (see *Annual of Scientific Discovery*, 1861, p. 228; 1862, p. 237, and 1863, 237), M. Pasteur claims to have proved that the effects hitherto attributed to the atmosphere of oxidizing and thus consuming dead organic matter, are really dependent on the growth of infusorial animalculæ. In a recent paper submitted to the French academy, M. Pasteur says,—"We must banish from science those preconceived views which consisted in the supposition that a whole class of organic substances—the nitrogenous—could acquire, by the hypothetical influence of direct oxidation, an occult force characterized by an internal movement, ready to communicate itself to organic substances pretended to be slightly stable." And further, "the slow combustion of organic matter after death, though real, is scarcely perceptible if the air is deprived of the germs of the lower organisms. It becomes rapid if the organic matter is permitted to cover itself with moulds, mildews, bacteriums, and monads. . . . The intermediate principles of organized beings would be, in some sort, indestructible, if we were able to suppress altogether those beings which God has made so extremly small, so useless in appearance, and life would become impossible, because the return to the atmosphere and to the mineral kingdom of that which had ceased to live would be entirely suspended."

M. Pasteur's latest researches have led to the opinion that all fermentation, properly so-called, as well as the phenomena of putrefaction, is due to the presence of infusorial animalcules, which are able to live (and do in fact live), and multiply without the presence of free oxygen gas, and without any contact with air. These animalcules belong to the genus *vibrio*, a genus which according to Ehrenberg contains six species. Why they should thus act as *ferments*, M. Pasteur does not undertake to explain, but he calls attention to this interesting fact; namely, "That while the ordinary actions of vegetables and animals upon the principles (substances) which nourish them, is not associated with fermentation, properly so-called;" we have, in the case of these animalcules, "the fact of nutrition accompanied by fermentation, and a nutrition without the consumption of free oxygen."

M. Pasteur's latest paper persented to the French Academy discusses especially the phenomena of putrefaction, and it contains so many points of interest, that we give from the *Comptes Rendus* a full abstract of it. He says:—

"In every case in which animal or vegetable matter undergoes spontaneous alteration and develops fetid gases, putrefaction is said to occur. We shall perceive in the course of our examination that this definition has two opposite defects. It is too general, because it brings together phenomena that are essentially distinct; and it is too restricted, because it separates others which have the same nature and origin. The interest and utility of an exact study of putrefaction has never been misunderstood.—Long ago it was hoped it might lead to practical consequences in the treatment of maladies which the old physicians termed *putrid*. Unfortunately the disgust inseparable from labors of this kind, joined to their evident complication, has hitherto arrested the majority of experimenters, so that nearly everything has still to be done. My researches on fermentation have naturally conducted me toward this study; and to the general conclusion that putrefaction is determined by organic ferments of the genus *vibrio*.

"The conditions under which putrefaction is manifested may vary considerably. Suppose, in the first instance, the case of a liquid, that is to say of a putrescible substance, of which all the parts have been exposed to contact with the air. Either this liquid may be shut up in a close vessel, or it may be placed in an open vessel, having an aperture more or less large. I will examine in succesion what happens in the two cases.

"It is commonly known that putrefaction takes a certain time to manifest itself, and that this time varies according to temperature, neutrality, acidity, or alkalinity of the liquid. Under the most favorable circumstances a minimum of about twenty-four hours is necessary before the phenomenon begins to be manifested by external signs. During this first period the liquid is agitated by an internal movement, the effect of which is to deprive of its oxygen the air which is in solution, and to replace it by carbonic acid gas. The total disappearance of the oxygen when the liquid is neutral or slightly alkaline is due, in general, to the development of the smallest of the infusoria, the *Monas crepusculum* and *Bacterium termo*. A very slight agitation occurs as these little beings travel in all directions. When this first action of exhausting the oxygen in solution is accomplished, they perish and fall to the bottom of the vessel like a precipitate; and if by chance the liquid contains no fecund germs of the ferments I have spoken of, it remains indefinitely in this condition without putrefaction—without fermenting in any way. This is rare, but I have met with several examples. Most frequently when the oxygen in solution has disappeared, the vibrion-ferments, which have no need of this gas, begin to appear, and putrefaction immediately sets in. Gradually it accelerates itself, following the progressive march of the development of the vibrions. The putridity becomes so intense that the microscopic examination of a single drop is very unpleasant. The fetid odor depends chiefly on the proportion of sulphur the substance contains. The odor is scarcely sensible if the matter is not sulphuretted, as, for example, in the fermentation of the albumenoid matter which water can carry away from the yeast of beer. The same is the case with butyric fermentation; and after my experiments butyric fermentation must, from the nature of its ferment, be considered as a phenomenon of exactly the same order as putrefaction properly so-called. Thus we see what happens when putrefaction is in some sort restrained. It results from what precedes, that contact with air is not necessary to the development of putrefaction, but that, on the contrary, if the oxygen, dissolved in a putrescible liquid, is not removed by the action of special beings, putrefaction will not occur, as the oxygen would cause the vibrions to perish if they tried to develop themselves.

"I shall now examine the case of free putrefaction in contact with air. That which I have already said might make it appear that it could not take place under such circumstances, as oxygen kills the vibrions which excite it. Notwithstanding this, I shall demonstrate that putrefaction in contact with air is more complete than when it is effected under shelter from air. Let us go back to our aërated liquid, this time exposed to contact with air in a wide-mouthed vessel. The removal of the oxygen takes place as previously described. The difference is that the bacteriums, etc., do not perish, but propagate themselves to infinitude at the surface of the liquid which is in contact with the air. They form a thin pellicle, which gradually thickens, falls into rags to the bottom of the vessel, is formed again, and so forth. This pellicle, with which is usually associated divers mucors and mucedines, prevents the solution of oxygen gas in the liquid, and thus permits the development of the vibrio-ferments. For them the vessel is as if closed against the introduction of air. They can even multiply in the pellicle at the surface, because they find themselves protected by the bacteriums and mucors against too direct an action of the atmospheric air.

"The putrescible liquid thus becomes the seat of two kinds of action, very distinct, and which are in relation to the physiological functions of the two kinds of beings that nourish themselves in it. The vibrions, on one hand, living without the aid of atmospheric oxygen, determine, in the interior of the liquid, acts of fermentation—that is to say, they transform nitrogenous substances into more simple, though still complex, products. The bacteriums or the mucors burn these same products, and bring them back to the simple condition of binary compounds, water, ammonia, and carbonic acid.

"We have yet to distinguish the very remarkable case in which the putrescible liquid forms a layer of slight thickness with easy access to atmospheric air. I shall demonstrate experimentally that both putrefaction and fermentation may be absolutely prevented, and that the organic matter will yield only to the operation of combustion.

"Such are the results of putrefaction effected with free contact with the atmosphere. On the contrary, in the case of putrefaction under shelter from the air, the products of the doubling* of the putrescible matter remained unchanged. This is what I meant when I said that putrefaction in contact with air is a phenomenon, if not always more rapid, at least more complete, more destructive of organic matter, than putrefaction under shelter from air. In order to be better understood, I shall cite some examples. Let us putrefy—I employ the word designedly in this instance as a synonym of ferment—let us us putrefy lactate of lime sheltered from air. The vibrion-ferments will transform the lactate into several products, one of which is always butyrate of lime. This new compound, indecomposable by the vibrio which provoked its formation, will remain indefinitely in the liquid without any change. But repeat the operation in contact with air. As fast as the vibrion-ferments act in the interior of the liquid, the pellicle on the surface gradually and completely burns the butyrate. If the fermentation is very active, this combustion is arrested, but entirely because the carbonic acid that is disengaged hinders the arrival of atmospheric air. The phenomenon recommences as soon as the fermentation is finished or lessened in rapidity. It is precisely the same if we cause a naturally sweet liquid to ferment under shelter from air; the liquid is charged with alcohol almost indestructible; while if we operate with contact of air, the alcohol, after being acetified is burnt and transformed entirely into water and carbonic acid. Then the vibrions appear, and in their suite putrefaction, when the liquid only contains water and nitrogenous matter. At length, in their turn, the vibrions and the products of putrefaction are burnt by the bacteriums or the mucors, of which the last survivors incite the combustion of their predecessors, and thus is accomplished the return of the organized matter to the atmosphere and to the mineral kingdom.

"Let us now consider the putrefaction of solid bodies. I have recently shown that the body of an animal is, under ordinary circumstances, shut against the introduction of the germs of inferior beings; consequently putrefaction begins first at the surface, and afterwards reaches the interior of a solid mass. If a whole animal is left after death either in contact with, or sheltered from air, its surface is covered with germs of inferior organism which the atmosphere has conveyed. Its intestinal canal in which fæcal matters are formed is filled not only with germs, but with fully-developed vibrions, as Leewen-

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* "*De doublement de la matiere putrescible.*" Pasteur means the products of the putrefactive fermentation, which he has described as complex, though more simple than the original substances.

hoek perceived. These vibrions are much in advance of those on the surface of the body. They are adult individuals, deprived of air, bathed in liquids, and in process of multiplication and function-performance. It is by their aid the putrefaction of the body begins, which has only been preserved up to that time by life and the nutrition of its organs."

After a few observations, M. Pasteur declares his conviction that "neither in their origin nor in their nature is there any resemblance between putrefaction and gangrene," and he adds, "instead of being a putrefaction, properly so-called, gangrene appears to be that condition of an organ in which one part is preserved in spite of death from putrefaction, and in which the liquids and solids act and reäct chemically and physically beyond the normal actions of nutrition."

We shall only remark upon this very important and interesting paper that few English microscopists adhere to Ehrenberg's notion, which is adopted by M. Pasteur, that vibrions are *animals*. On the contrary, most authorities, agree that they belong to the vegetable kingdom, and are in many cases transitional forms of Algæ.

FERMENTATION AS A CAUSE OF DISEASE.

M. Polli, of Milan, Italy, has recently published a treatise "*on fermentation as the cause of various diseases.*" He states that there exists a great analogy between the processes of fermentation and many organic metamorphoses, which occur in some diseases; and he has made experiments by injecting substances into the blood-vessels of animals, which have acted as ferments, and have produced a state of action resembling natural diseases. By injecting purulent putrid matter into the veins of animals, diseases presenting all the characteristics of typhoid fever were produced. Contagious diseases, such as glanders, which is produced by the injection of glanderous humors, are facts which prove that a general affection may be induced by the simple introduction into the blood of a substance capable of acting as a ferment. M. Polli also believes that he has proved, by a series of experiments, that it is possible to neutralize morbific ferments in the blood of animals, by chemical substances which do not act in a manner incompatible with life; and it is by these substances that he hopes to treat successfully those diseases of which fermentation is the primary cause. It is well known that sulphuric acid gas prevents alcoholic and acetic fermentation, and also the fermentation of animal substances and organic matters in general. Thus, it arrests, if it be already begun, the fermentation produced by saliva and diastase in contact with starch. M. Polli has proved that alkaline or earthy sulphites possess the same antiseptic properties.

From a number of experiments made upon dogs, and alluded to in his memoir, he has determined the safe and efficacious dose of sulphites for internal administration, the changes which they undergo in the organization, and their curative action in the affections produced by the injection of putrid or contagious matters into the blood. The following is an account of some of his experiments:

Ten grammes of sulphite of soda were given to a dog during a period of five days, then one gramme of pus was injected into the femoral vein. The animal became dull, and refused the food which it was offered, but the next day its spirits returned and it ate willingly. Two days after, the same experiment was repeated, and was followed by the same results. At the end of a few days, the animal was perfectly cured.

One gramme of pus was injected in two portions into the veins of a dog, of a more robust nature than that operated upon in the preceding experiment. The animal became spiritless, but the next day took some food; the following day it was very low, it breathed with difficulty, its wounds were sanious, its left leg and foot swollen, and it died ten days afterward.

An equal quantity of putrid blood was injected into the veins of three dogs; one died five hours after the infection, another after five days of illness, and the third, to which some sulphite of soda had been administered, after having experienced some trifling symptoms of illness, rapidly recovered.

Numerous other experiments made with putrid blood and morbific mucus proved that the animal died with all the symptoms of a general infection, whenever sulphite of soda was not administered, and that, on the contrary, they speedily recovered under its influence.

In a communication, on essentially the same subject as the above, made to the British Association, 1863, by Dr. G. Robinson, the author alluded to the circumstance of the analogy between many of the phenomena of fevers and other zymotic diseases, and the ordinary process of fermentation having been perceived and recognized by Hippocrates and the oldest writers on medicine. Their idea was, that a poisonous ferment existing in the atmosphere entered the mass of the blood, and induced in it a series of changes, which gave rise to the excessive heat and other peculiarities of that class of diseases. At the present time, this doctrine, modified by the discoveries of Liebig and other chemists, has been adopted by most physicians, and forms the basis of the classification of disease framed by Dr. Farr, and used by the registrar-general. It thus supposes living germs to exist in the atmosphere, which, when introduced into the body, gives rise to a specific and regular series of morbid actions, pursuing a definite course in a definite time, as in small-pox,—those germs being disclosed and multiplied, and producing others capable of reproducing in other bodies the same succession of changes. Other pathologists have supposed that the atmospheric poison acts on the blood chemically, by giving rise to what may be termed catalytic actions; while the author is disposed to believe, from what he saw during the cholera epidemic in Newcastle, in 1853, that some of these volatile organic matters in the atmosphere are capable of acting on the human body as direct poisons; and that this inanimate, volatile, poisonous matter also furnishes nutrition to the organic germs suspended in the air. After these preliminary remarks, he proceeded to refer briefly to a number of scattered facts, which seemed to him to indicate the existence of a great principle, which might hereafter be found applicable to the prevention or mitigation of epidemic diseases, by the direct use of substances capable of arresting the process of morbific fermentation. He mentioned the following facts as converging to this conclusion:—1. Antiseptic substances, ranging from simple, innocuous matters, such as sugar, up to the powerful metallic poisons, such as corrosive sublimate, and forming a very numerous and diversified group, have been long known to be capable of arresting the putrefaction of animal and vegetable structures. 2. The same substances prevent the formation of fungi, as is seen in the use of solutions of metallic salts in taxidermy, in the prevention of dry-rot, etc. 3. Many of those agents are also known to arrest at once the process of fermentation; as, for instance, sulphurous acid; and Emi and other chemists have observed under the microscope the rapid stoppage of the vitality of the yeast-plant when a solution of arsenious acid was added to the fermenting liquor. 4. The formation of the fungus in and on the plant, which causes the vine disease, is prevented by applying sulphur to the affected vines. 5. In Cornwall, it is believed that the arsenical fumes from the tin-calcining furnaces exercised an influence over the potato-plants in the neighborhood, which preserved them from the disease then affecting other parts of the same county. [A statement to this effect, signed by Capt. Charles Thomas, sen., of Dolwath, and sixteen cottagers, was here read.] 6. It has been found, that when a species of fermentation has taken place in the human stomach, resulting in the development in large quantities of a minute organism (the *sarcina ventriculi*), this morbid action can be controlled and stopped by the direct anti-zymotic influence of certain salts, such as sulphate of soda, in doses perfectly compatible with the patient's safety. 7. In different parts of the world, among different races, a belief has long existed that certain antiseptic substances, of which arsenic may be taken as the type, are capable of acting as antidotes or preservative and curative agencies against atmospheric and other poisons; and in some cases that popular belief has proved to be well-founded. The experience of the multitude discovered the value of arsenic as a cure for ague long before it was recognized as such by physicians. The arsenical fumes of certain works in Cornwall were stated by the late Dr. Paris to have stopped the ague, previously endemic there. More recently it has been stated, that the arsenic eaters of Styria are peculiarly exempt from fevers and other epidemic diseases; and in India the natives have long used arsenic as an antidote to the poison of snakes. Dr. Robinson concluded by expressing a belief that these scattered observations were not only sufficient to justify and necessitate further inquiries in this direction, but seemed in themselves to shadow forth the outline of a great law, which might at some future time be productive of immense benefit to mankind.

From the New American Cyclopædia.

JONATHAN EDWARDS.

BY GEORGE BANCROFT.

Concluded.

From the consideration of the will the transition is natural to the theory of virtue; and Edwards finds it to consist in love—not in love as resting complacently on its objects, but in love as the ruling motive of the will; love in action, benevolence. A knowledge of divine things comes from the divine in man; as justification comes of faith, so virtue has its perennial spring within the soul. And this love is not for self; the doctrine of Edwards is the intensest protest against the theory of self-love. He raises the soul to the highest point of contemplation, takes it as it were to be present at creation, and bids it love actively all that is, universal being, the all-comprehending entity of God; so that the virtuous man, with holy love sanctifying his will, is sent forth joyously for action, action, and still for action, as God's own soldier and servant. Thus virtue includes right reason, holiest love, and action; a rational motive, warmed by love, and bearing fruits of righteousness. The view is not an eccentric one in Edwards's system; it lies at its heart. It appears in his college manuscripts; it colors half a dozen of the resolutions which he formed at twenty; it runs through his treatise on the affections; it reappears in his essay on the end of God in creation. It must be accepted, or Edwards himself cannot be accepted. It enters too deeply into all that he has written to be set aside as no essential part of him, and must be explained and developed in connection with the sum of all his doctrines. The test of a theory is that it embraces and absorbs all that is good and true in other theories on the same subject; the rod of the true prophet swallows up all the rods of his opposers. Does virtue imply the love of God with all the soul? This is exactly the doctrine of Edwards; for God is the Being of beings, "in effect, Being in general." Does it consist in respect for the moral fitness of things? That moral fitness lies impressed on the universe which perfect moral power has created. Does it consist in the avoiding extremes? The universe of being is moderated by the divine law, and is ever giving the lesson of just order and proportion. Does it consist in regard to truth? And where is truth to be found but in the world that God created, and in the Being of beings himself? Does it rest on sympathy? But nothing so certainly and universally commands sympathy as a spirit that is in harmony with the whole system of God's providence. The love to universal Being includes all being, each in its degree, according to its amount of existence; active love for the good of the world of mankind before the love of country, of country before that of a single city, of a city before a family, of the family before the individual, of the individual only in subordination to the great system of the whole. The theory is directly at war with the system of self-love as the foundation of moral order, or a respect to happiness as the only good; for where self-love is made the root, it grows to be inordinate, and is at war with the being of the whole. But every man, into whatever career of enterprise he goes, may take Edwards along with him

in all his course of prosperity, if he will but seek that alone which is in harmony with the greatest good, and keep every passion and inclination subordinate to the divine will. Least of all would Edwards, whose whole theory is one of love, weaken the bonds of family affection; only the love of wife or husband, parent or child, must not be the paramount motive; the wife must cheer her husband to do his duty, even though he is called upon to become a martyr; the father may bless his son, who goes forth to battle for his country's freedom, or as a missionary defies the danger of foreign climes to diffuse the knowledge of pure religion. On Edwards himself the effect of this theory is apparent in a wonderful tenderness toward every thing, a compassion for human frailties, a candor of judgment that mirrored the purity of his soul. Viewed in this light, the doctrine of the oneness of the race, which Edwards asserted with greater clearness and force than the modern school of philosophers who have so much to say of the *solidarite* of humanity, gains new significance, as may be seen, not altogether without excesses, in the writings of his followers.—The ethical theory of Edwards is cosmical; no one was ever more so. His manner of contemplating the universe was also cosmical. It embraced more than the whole course of time, and all as one work; universal history resting on the principle of the redemption of the world, decreed from all eternity; a history of the gradual progress and advancement of the race through the presence of the Divine Word and its ever approaching triumph over all its enemies. Events seem confused like the work of an architect, who employs many hands in many kinds of labor at once; but a knowledge of the design removes all appearance of confusion; and so the design of the Divine Word in redemption gives unity to the history of all the nations of the earth. The development of this idea employed the latest thoughts of Edwards. He left his work unfinished; but the sketch shows how completely he considered universal history as the record of God's providence, and the centuries as a progressive series; tumults and revolutions following one another from age to age, only to bring forth truth and holiness, so "that all things should be shaken until that comes which is true and right, and agreeable to the mind of God, which cannot be shaken," and victory be brought to pass by "a gradual progress," "very swiftly, yet gradually." Every error of opinion and superstition must be abolished. "Well may we admire," says Edwards, "the greatness of this building of God, which he builds up age after age." "All the revolutions in the world are the sum of God's works of providence." "The work of the new creation is more excellent than the old; so it ever is: when one thing is removed by God to make way for another, the new excels the old." "The events of providence seen in this light appear an orderly series of events, wisely directed in excellent harmony and consistence, tending all to one end. The wheels of providence are not turned round by blind chance, but they are full of eyes round about, as Ezekial represents, and they are guided by the Spirit of God; where the Spirit goes they go; and all God's works of providence through all ages meet in one at last, as so many lines meet in one center. It is with God's work of providence as it is with his work of creation: it is but one work—one regular scheme. There are many stones, many pieces of timber, but all are so joined and fitly framed together that they make but one building; they have all but one foundation, and are united at last in one top stone. God's providence may not unfitly be compared to a large and long river having innumerable branches, beginning in different regions, and at a great distance from one another, and all conspiring to one common issue."

The sum of the whole is that Edwards makes a turning point in the intellectual, or, as he perhaps would have called it, the spiritual history of New England. Calvin had risen up to battle against mediæval superstitions and mediæval aristocracies; a plebeian, or to use his own word, "*homunculus*," introducing thorough republican reform; for outward penance substituting purity of heart; for hierarchy and laity, the equality of believers. Setting himself up over against the privileged classes, he, with a loftier pride than theirs, revealed the power of a yet higher order of nobility, not of a registered ancestry of fifteen generations, but one absolutely spotless escutcheon, pre-ordained in the council chamber of eternity. But here in the forests of America there was no danger of exile, imprisonment, and fire; there were no persecutions to defy, no oppressive authority to combat. The time was come when two other of the original component elements of Calvinism should receive their development. The faith condensed in the symbols of Calvinism demanded to be subjected to free inquiry, and, without "dodging, shuffling, hiding, or turning the back," to be shown to be in harmony with reason and common sense. Predestination ceased to be the doctrine that best nourished the spirit of patriotism and liberty; and in the free, peaceful, and happy homes of the New England yeomanry, it yielded the justly due precedence to that principle of active "love which is the comprehension of all true virtue." The great representative of this period of transition is Jonathan Edwards. New England and New Jersey, in the age following Edwards, applied more thought to the subject of religious philosophy and systematic theology than the same amount of population in any other part of the world; and his influence is discernible on every leading mind. Bellamy and Hopkins were his pupils; Dwight was his expositor; Smalley, Emmons, and many others were his followers; through Hopkins his influence reached Kirkland, and assisted to mould the character of Channing. Edwards sums up the old theology of New England, and is the fountain head of the new. The toils of a century turned the wilderness, to which men had been driven for liberty to say their prayers, into a garden of plenty, peace and joyous activity; he that will trace the corresponding transition of Calvinism from a haughty self assertion of the doctrine of election against the pride of oppression to its adoption of love as the central point of its view of creation and the duty of the created; he that will know the workings of the mind of New England in the middle of the last century, and the throbbings of its heart, must give his days and nights to the study of Jonathan Edwards.

NEWS ITEMS.

MARYLAND is added to the list of Free States. Her Constitutional Convention, by a vote of 53 yeas to 27 nays, has voted that "Hereafter in this State, there shall be neither slavery nor involuntary servitude, except in punishment of crime, whereof the party shall have been duly convicted; and all persons held to service or labor as slaves are hereby declared free."

WE stated last week that Congress had expressed its decided opposition to the repeal of the $300 commutation clause. We have now to record its repeal. After three times voting against its repeal, the House of Representatives on Tuesday last passed the bill of Mr. Smithers of Delaware, which provides: that the President may at any time call for any number of volunteers for one, two, or three years; that in case the quota of any town shall not be filled within sixty days after the call, the President may order a draft for one year to fill that quota; that in case of a draft there shall be no exemption by payment of money. The bill also provides for the payment of bounties, and allows the loyal states to recruit in the rebellious states. The Senate had previously voted to repeal the commutation clause. The remarkable change in the votes of the Representatives was no doubt occasioned by the direct influence of the President and his advisers, who represent that the system heretofore existing has substantially failed, and that the Government must have power to fill the armies speedily by compulsory draft.

SALMON P. CHASE has resigned his post of Secretary of the Treasury, an event which has caused no little excitement in political circles. Many rumors are afloat as to the cause of his resignation, of which the most probable is, a difference of opinion between the Secretary and President on the subject of increased taxation, and also in regard to the appointment of assistant treasurer in New York. Senator Fessenden, of Maine, has been appointed his successor.

A COLORED woman was lately ejected from one of the cars belonging to the Eighth Avenue Railroad Company by a New York policeman. The policeman was tried, and severely reprimanded; and all the parties concerned are said to be very much ashamed of the transaction. The company have since issued the following notice: "Hereafter colored people are allowed to ride in all the cars (both large and small) of this company."

A NEW loan bill has passed Congress. It authorizes the Secretary of the Treasury to borrow four hundred millions of dollars, redeemable in from five to thirty years, to bear 6 per cent. interest.

IN respect to Grant's losses since he started on his Richmond tour there is a great variety of statements, and we suspect that somebody tells big falsehoods. One paper states that 15,000 Union troops were killed in the battle of the Wilderness alone, while another paper says: "It is stated upon the best official authority that the number of the killed, from the time the army crossed the Rapidan until it reached the James river, did not exceed four thousand men." Grant's total loss in killed, wounded, and missing since he crossed the Rapidan, is estimated to be from 40,000 to 100,000.

ON Wednesday, the 29th, an Emigrant train, consisting of eleven cars, and containing 354 German emigrants, went over the Beloit Bridge on the Grand Trunk railroad, Canada East. The engineer is considered responsible for this fearful loss of life—as he disregarded the standing order for stopping the train before going on the bridge. The depth of water where the cars went over is about ten feet. Latest accounts state that 87 dead bodies have been recovered, and that eighty persons were wounded.

☞The portrait accompanying a sketch of Mr. Newhouse, given in our last No., was engraved by Messrs Waters and Son of New-York. We must do these artists the justice to say that their work in this instance was highly satisfactory, and the likeness a capital one.

TO CORRESPONDENTS.

J. P. M., Boston.—"1. What are the terms of admission to your Community? 2. Must a man be a believer in the divinity of the Bible to become a member? 3. Must he pay in a certain amount of cash to be a member? 4. If he have a family of children are they to be separated, or do the parents have the control of them? 5. To what occupation could you put a member who has been brought up to work in a retail store in the city? 6. Do you receive boarders or visitors for a few weeks, and if so at what price per week?"

1. The terms of admission are somewhat like those which you would deem proper as a preliminary to marriage or the receiving of a person to the intimacy of your household, viz., thorough acquaintance and downright liking.

2. As the Community owes its existence to the teachings of the Bible, we don't think a disbeliever in the latter would like to join it.

3. No.

4. The children at Oneida after the nursing period are committed for care to a special department, to which the parents have free access and belong as attendants if they choose.

5. We have business enough of many kinds for any one who wishes to make himself useful.

6. We do not receive boarders. Our space at Wallingford is too limited to receive visitors except for a day or so, for which period they are always welcome. Persons wishing to visit Oneida and informing the Community to that effect are generally invited to spend two or three days there—charges nothing.

S. L., Canada West.—Your communication has been forwarded to the friends at Oneida, who will take action on your request.